



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
-----------------	-------------	----------------------	---------------------	------------------

10/563,373

01/04/2006

Isamu Nakao

09812.0122-00000

8827

22852

7590

05/28/2010

FINNEGAN, HENDERSON, FARABOW, GARRETT & DUNNER
LLP

901 NEW YORK AVENUE, NW
WASHINGTON, DC 20001-4413

EXAMINER

MA, JAMESON Q

ART UNIT

PAPER NUMBER

1797

MAIL DATE

DELIVERY MODE

05/28/2010

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/563,373	Applicant(s) NAKAO ET AL.	
	Examiner JAMESON Q. MA	Art Unit 1797	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 April 2010.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 5-17 is/are pending in the application.
- 4a) Of the above claim(s) 6-17 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 5 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/20/2010 has been entered.

Claim Interpretation

2. Applicant appears to have invoked 112 Sixth Paragraph in independent claim 1. A means for holding a substrate is described by the instant specification as glass. An electric field controlling means for generating an electric field between the electrode of the substrate and the external electrode is described by the instant specification as applying a voltage source across the electrodes.

Claim Rejections - 35 USC § 102

3. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

4. Claims 1-2 are rejected under 35 U.S.C. 102(b) as being anticipated by Chen et al. (US 2003/0087292).

It is noted that a substrate having a reaction area for performing biological reactions and an electrode formed in the reaction area is not positively claimed and

Art Unit: 1797

does not limit the claimed apparatus. Such limitations should be put after the 'comprising' limitation and should be positively recited.

Regarding claim 1, Chen discloses a means for holding the substrate (see [0158], made from glass), an electrode (see fig. 31: lower electrode) disposed opposite to the electrode of a substrate (see fig. 31: electrode pads). The lower electrode comprises a free metal end (see [0186]: is made of metal) and a semiconductor formed on the metal end (see fig. 31 and [0186]: the surface is viewed as mirror finished and as a wafer). Chen also describes an electric field controlling means (see [0023], [0062], and fig. 33).

Regarding claim 2, the lower electrode of Chen is a conductive layer formed as an underlying layer of the reaction area (see [0186]) and the external electrode is viewed as having a plane parallel to the conductive layer.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 2003/0087292).

Regarding claim 5, Chen discloses all of the claim limitations as set forth above. As discussed above, Chen discloses a silicon layer formed on top of a metal electrode. Alternatively, Chen discloses the lower electrode can be a silicon layer doped with p or n type materials (see [0186]).

Chen does not explicitly disclose that there is a semiconductor comprising acceptor or donor ions doped therein formed on a metal end.

However, it would have been obvious to one of ordinary skill in the art to use p or n type doped silicon as the biocompatible layer in order to provide a redundant conductive layer and because doing so would have done nothing more than to simply choose a commercially available type of silicon which has been known to work for the same purposes of biocompatibility in the same application as taught by Chen.

7. Claims 1-2 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 2003/0087292) in view of Kobayashi et al. (US 2003/0104709).

This is an alternative ground of rejection assuming *arguendo* that the semiconductor surface of Chen is not 'mirror-polished.'

Chen discloses that the biocompatible layer (semiconductor) can be silicon or any other suitable material (see [0186]).

Kobayashi discloses silicon wafers (semiconductors) are generally mirror polished (see [0073]).

It would have been obvious to one of ordinary skill in the art at the time of invention to use the mirror polished silicon wafer taught by Kobayashi as the biocompatible silicon layer in the apparatus of Chen because doing so would have merely been selecting a known commercially available type of silicon, as taught By Kobayashi.

Regarding claim 5, modified Chen discloses all of the claim limitations as set forth above. As discussed above, Chen discloses a silicon layer formed on top of a

Art Unit: 1797

metal electrode. Alternatively, Chen discloses the lower electrode can be a silicon layer doped with p or n type materials (see [0186]).

Modified Chen does not explicitly disclose that there is a semiconductor comprising acceptor or donor ions doped therein formed on a metal end.

However, it would have been obvious to one of ordinary skill in the art to use p or n type doped silicon as the biocompatible layer in order to provide a redundant conductive layer and because doing so would have done nothing more than to simply choose a commercially available type of silicon which has been known to work for the same purposes of biocompatibility in the same application as taught by Chen.

8. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 2003/0087292) as applied above in view of Ootsubo et al. (used in previous Office Action, US 2003/0088297).

Regarding claim 3, Chen discloses all of the claim limitations as set forth above. Chen does not explicitly disclose the electric field controlling means capable of generating an AC electric field between the two electrodes.

Ootsubo is similarly directed to an electrode device with multiple electrodes which is used to analyze hybridization reactions (see [0016]). Ootsubo further discloses that voltage applied from a voltage source may be DC or AC voltage.

It would have been obvious to one of ordinary skill in the art at the time of invention to allow the apparatus of Chen to output AC or DC voltage because doing so would allow multiple types of analysis to be performed.

Art Unit: 1797

9. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen et al. (US 2003/0087292) in view of Kobayashi et al. (US 2003/0104709), as applied to claims 1-2 and 5 above, and further in view of Ootsubo et al. (used in previous Office Action, US 2003/0088297).

Regarding claim 3, modified Chen discloses all of the claim limitations as set forth above. Chen does not explicitly disclose the electric field controlling means capable of generating an AC electric field between the two electrodes.

Ootsubo is similarly directed to an electrode device with multiple electrodes which is used to analyze hybridization reactions (see [0016]). Ootsubo further discloses that voltage applied from a voltage source may be DC or AC voltage.

It would have been obvious to one of ordinary skill in the art at the time of invention to allow the apparatus of modified Chen to output AC or DC voltage because doing so would allow multiple types of analysis to be performed.

Response to Arguments

10. Applicant's arguments with respect to claims 1-3 and 5 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to JAMESON Q. MA whose telephone number is (571)270-7063. The examiner can normally be reached on M-F 8:30 AM - 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Marcheschi can be reached on (571)272-1374. The fax phone

Art Unit: 1797

number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JM
May 25, 2010

/Michael A Marcheschi/
Supervisory Patent Examiner, Art
Unit 1797